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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,932	03/07/2002	Brian M. Ballweber	CS99022RL/10-60	1293

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EXAMINER

NGUYEN, DUC M

ART UNIT PAPER NUMBER

2685

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,932

Applicant(s)

BALLWEBER ET AL.

Examiner

Duc M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-7, 10-17 and 20-24 is/are rejected.
- 7) ☐ Claim(s) 8, 9, 18, 19 and 25 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3, 4</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the information disclosure statements submitted on 10/21/03 has been considered by the examiner (see attached PTO-1449).

Drawings

2. The corrected drawings were received on 9/17/03. These drawings are accepted.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims **1, 5-7, 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Groves et al** (US **6,549,096**) in view of **Pugel** (US **5,020,146**).

Regarding claim **1**, **Groves** discloses an integrated capacitance circuit for a tuning circuit of a prior art which comprises a plurality of capacitors that can be switched in and out of the tuning circuit selectively to provide a range of discrete capacitance values (see **Fig. 1** and **col. 1, lines 13-50**). Here, although **Groves** is silent on the primary and secondary coils of the tuning circuit, such tuning circuit utilizing primary and secondary coils is well known in the art as disclosed by **Pugel** (see **Figs. 2**). Since the tuning circuit in **Pugel** comprises varactor diodes for tuning (see **col. 2, line 58 – col. 3,**

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line 10), and since **Groves** does mentioned that the tuning range of varactor diode is limited (see col. 1, lines 21-39), it would have been obvious to one skilled in the art to incorporate the above teaching in **Groves's** reference to the tuning circuit of the receiver in **Pugel** as well, so that a large change in frequency could be achieved when tuned from one frequency to another. By doing so, the claimed limitations are made obvious by **Groves** and **Pugel** for providing an integrated circuit as claimed, so that a large change in frequency could be obtained when tuned from one frequency to another (i.e, from UHF to VHF).

Regarding claim **5**, it is rejected for the same reason as set forth in claim 1 above. In addition, it is clear that Groves would disclose a third capacitance circuit (i.e, a varactor or an additional switched capacitor) is used to fine tune (smooth tuning) of the capacitance values (frequency) of other capacitance circuits (see col. 1, lines 35-62).

Regarding claim **6**, it is rejected for the same reason as set forth in claim 1 above. In addition, it is clear that Groves would disclose control terminals and control signals as claimed (see ref. 18 in Fig. 1).

Regarding claim **7**, it is rejected for the same reason as set forth in claim 1 above. In addition, it is clear that Groves would disclose a capacitor and an integrated switch as claimed (see refs. 14, 16 in Fig. 1).

Regarding claim **23**, the claim is interpreted and rejected for the same reason as set forth in claim 1 above.

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4. Claims **2-4, 10-17, 20-22, 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Groves** in view of **Pugel** and further in view of **Long** (US **6,026,286**).

Regarding claim **2**, it is rejected for the same reason as set forth in claim 1 above. In addition, although **Groves** as modified fails to disclose a center tap for winding coils, it is noted that using a center tap for feeding a bias source through the secondary coil is known in the art as disclosed by **Long** (see Fig. 5 and col. 16, lines 12-15). Therefore, it would have been obvious to one skilled in the art to provide the above teaching of **Long** to **Groves** and **Pugel** for using a center tap to feed a bias source through the primary or the secondary coil as claimed, for eliminating the need of an additional inductor requirement for the load (mixer) and the source (amplifier).

Regarding claim **3**, it is rejected for the same reason as set forth in claim 1 above. In addition, although **Groves** as modified fails to disclose impedance matching for power match., it is noted that using impedance matching between the source and the load for power matching would have been obvious to one skilled in the art as disclosed by **Long** (see col. 1, lines 37-39, col. 14, lines 11-13, and col. 17, lines 19-21). Therefore, it would have been obvious to one skilled in the art to provide the above teaching of **Long** to **Groves** and **Pugel** for matching impedances as claimed, for maximizing power gain to the mixer.

Regarding claim **4**, it is rejected for the same reason as set forth in claim 1 above. In addition, it would have been obvious to one skilled in the art to use a

differential signal as disclosed by **Long** (see Fig. 5, and col. 16, lines 7-11), for improving image frequency rejection.

Regarding claim **10**, it is rejected for the same reason as set forth in claim 4 above. In addition, it would have been obvious that the receiver as modified by **Long**, **Groves** and **Pugel** could be modified for frequency bands below 1 GHz and above 1.8 GHz and would work equally well.

Regarding claim **11**, it is rejected for the same reason as set forth in claim 1 above. In addition, it would have been obvious to one skilled in the art to use a LNA and implement the receiver front end as an IC circuit as disclosed by **Long** (see Figs 6, 14-15 and col. 2, lines 5-12), for reducing size and cost.

Regarding claims **12-14**, the claims are interpreted and rejected for the same reason as set forth in claims 2-4 above.

Regarding claim **15**, it is rejected for the same reason as set forth in claim 11 above. In addition, it is clear that Groves would disclose a third capacitance circuit (i.e, a varactor or an additional switched capacitor) is used to fine tune (smooth tuning) of the capacitance values (frequency) of other capacitance circuits (see col. 1, lines 35-62).

Regarding claim **16**, it is rejected for the same reason as set forth in claim 11 above. In addition, it is clear that Groves would disclose control terminals and control signals as claimed (see ref. 18 in Fig. 1).

Regarding claim **17**, it is rejected for the same reason as set forth in claim 11 above. In addition, it is clear that Groves would disclose a capacitor and an integrated switch as claimed (see refs. 14, 16 in Fig. 1).

Regarding claim **20**, it is rejected for the same reason as set forth in claim 10 above.

Regarding claim **21**, it is rejected for the same reason as set forth in claim 11 above. In addition, since using a plurality of narrow band amplifiers in place of a broadband amplifier is known in the art (Official Notice), it would have been obvious to one skilled in the art to further modify y **Long, Groves** and **Pugel** for providing a plurality of narrow band amplifiers as claimed, for improving signal isolation and reducing inter-modulation distortion.

Regarding claim **22**, it is rejected for the same reason as set forth in claim 11 above. In addition, since using a double balanced direct conversion mixer for a multiband receiver is known in the art (Official Notice), it would have been obvious to one skilled in the art to further modify **Long, Groves** and **Pugel** for providing a mixer as claimed, for eliminating extra components required for indirect conversion.

Regarding claim **24**, the claim is interpreted and rejected for the same reason as set forth in claim 4 above.

Allowable Subject Matter

5. Claims 8-9, 18-19, 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 8, 18, 25, the cited prior art fails to disclose or make it obvious an integrated tunable resonant coupling network which comprises components as recited in the claims, wherein each integrated capacitance circuit includes a series circuit that includes a first capacitor in series with an integrated switch that is further in series with a second capacitor, and wherein the first capacitor and the second capacitor arranged to be of equal value.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Bidese** (US 5,644,598), Switching arrangement for coupling a transmitting unit to a transmission line.
- **Chang et al** (US 5,872,489), integrated tunable inductance network and method.
- **Carney et al** (US 5,446,447), RF tagging system including RF tags with variable frequency resonant circuit.
- **Bastani et al** (US 6,157,822), Tuned low power/low noise mixer.
- **Bartlett et al** (US 5,834,975), Integrated variable gain power amplifier and method.
- **Liu et al** (US 5,715,531), Synchronous tracking filter circuit for a broadcast satellite tuner.
- **Clark et al** (US 6,181,218), High linearity, low-spread variable capacitance array.

7. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

703-872-9314 (for formal communications intended for entry)

(for informal or draft communications, please label PROPOSED or DRAFT)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc M. Nguyen whose telephone number is 703-306-4531. The examiner can normally be reached on Monday-Thursday (9:30 AM – 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Duc Nguyen



July 23, 2004